Original Article

Self-Efficacy and Emotion Regulation as Correlates of Psychological Distress among Family Caregivers of Working-Age Hemodialysis Patients in Indonesia: A Cross-Sectional Study

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ABSTRACT

Background: The increasing prevalence of chronic kidney disease among working-age populations has heightened psychological distress among family caregivers, especially in low- and middle-income countries. However, the roles of self-efficacy and emotion regulation in influencing this distress remain unclear. This study aimed to examine the relationships between self-efficacy, emotion regulation, and psychological distress among family caregivers of patients undergoing hemodialysis.

Methods: This cross-sectional study, reported in accordance with STROBE guidelines, involved 201 family caregivers recruited through convenience sampling to ensure accessibility in hemodialysis settings. Self-efficacy and emotion regulation were independent variables, while psychological distress was the dependent variable. Data were collected using validated and reliable instruments General Self Efficacy Scale (GSE), Emotion Regulation Questionnaire (ERQ), The Kessler Psychological Distress and analyzed using Spearman's rank correlation tests.

Results: The results show significant negative correlations between psychological distress and both self-efficacy ($r = -0.346$, $p < 0.001$) and emotion regulation ($r = -0.217$, $p < 0.001$). These findings indicate that higher levels of self-efficacy are associated with lower psychological distress. Similarly, better emotion regulation is associated with reduced psychological distress, with self-efficacy demonstrating a stronger association.

Conclusion: These findings highlight the importance of psychosocial resources in supporting caregiver well-being in family-centered care contexts. It is recommended to integrate psychological counseling programs for families of patients with chronic kidney disease undergoing hemodialysis, along with structured educational interventions emphasizing the importance of emotion management.

Keywords: Chronic kidney disease; Hemodialysis; Family caregivers; Self-efficacy; Emotion regulation; Psychological distress.

Implications for Practice:

- Enhancing caregiver self-efficacy and emotion regulation can support evidence-based psychosocial interventions to improve patient-centered hemodialysis care.
- Routine screening of caregiver psychological distress can inform updates to nursing protocols and interdisciplinary care pathways.

Implications for Practice:

- Psychosocial interventions targeting caregivers can be adapted to culturally sensitive and resource-constrained healthcare settings

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Introduction

The global prevalence of chronic kidney disease (CKD) across all age groups has been reported to have increased by 29.3% since 1990, reaching 697.5 million cases in 2017 (Bikbov et al., 2020). Along with societal and epidemiological transitions, there has been a shift in disease patterns from communicable diseases to non-communicable diseases (NCDs), largely driven by unhealthy lifestyles. The onset of CKD among individuals of productive age has continued to rise due to lifestyle factors and NCD-related comorbidities, including hypertension, diabetes mellitus, obesity, smoking, dyslipidemia, and hyperuricemia (Kuma & Kato, 2022). CKD cases among productive-age patients (18–60 years) are influenced by lifestyle factors and NCD comorbidities (Kovesdy, 2022).

In developing countries such as Indonesia, the number of active patients with chronic kidney disease (CKD) reached 132,142 cases by 2018, with 53,940 newly reported cases. The majority of CKD patients in Indonesia are of productive age, ranging from 18 to 59 years (83.1%), with a mean age of 44 years. These data are consistent with findings from the 2018 National Basic Health Research (RISKESDAS), which indicated that the population diagnosed with CKD was aged 15 years and older. In East Java, most CKD patients were within the productive age group of 15–24 years, totaling 15,036 individuals (Kemenkes, 2018). Productive age, defined as the age range of 15 to 64 years, represents the period during which individuals are economically active and able to support themselves and their families (OECD, 2025). Consequently, the occurrence of CKD during productive age is likely to generate substantial psychosocial challenges for both patients and their families.

Chronic kidney disease (CKD) is an incurable condition; therefore, renal replacement therapy is required to prolong patient survival, and most of them are on hemodialysis (HD) (Alshammari et al., 2023). Patients with chronic kidney disease of productive age, as well as their caregiving families, often have to sacrifice employment due to the prolonged duration of therapy. This situation imposes burden (Darwish et al., 2020; Frandsen et al., 2024; Taset Alvarez & Martinez Fajardo, 2018). This caregiving burden may lead to negative emotional responses, resulting in deteriorated family health, fatigue, social isolation, anxiety, and depression. Such negative emotions can compromise the quality of care provided by family caregivers (Alshammari et al., 2023). Inadequate family caregiving may subsequently reduce patients' motivation and adherence to therapy.

Caregiving responsibilities and lifestyle changes experienced by families following a patient's initiation of hemodialysis impose a distinct burden on family members, including stress, depression, anxiety, reduced self-confidence, communication difficulties, fatigue, financial strain, and decreased quality of life (Hussein & Faraj, 2022; Lefrère et al., 2025; Sajadi et al., 2021). These challenges increase families' vulnerability to psychological distress. Psychological distress is defined as a negative psychological state resulting from prolonged and excessive stress and is characterized by symptoms of anxiety and depression (van Hof et al., 2023). This state of psychological distress adversely affects the quality of life of both patients and their families. Therefore, self-efficacy is essential in enabling families to cope effectively with psychological distress (van Hof et al., 2023).

Chronic kidney disease (CKD) increasingly affects productive-age populations, placing substantial caregiving burdens on family members. Family caregivers often experience psychological distress due to the emotional, physical, and

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economic demands of long-term hemodialysis care. Self-efficacy, defined as an individual's perception of their ability to perform tasks and achieve desired goals, is a key psychosocial resource that supports effective coping in caregiving (Shahrour & Dardas, 2020). Grounded in Bandura's Social Cognitive Theory, high self-efficacy enables caregivers to manage caregiving responsibilities with confidence, which in turn may enhance emotion regulation and reduce psychological distress (Cui et al., 2023). While prior research has documented associations between self-efficacy and psychological distress in caregivers of patients with chronic illnesses, studies specifically focusing on productive-age family caregivers of hemodialysis patients in Indonesia and other LMICs remain scarce. Most existing studies have emphasized patient psychological outcomes or caregivers in other chronic disease contexts, leaving a clear gap in understanding caregiver-focused psychosocial dynamics in resource-limited settings.

In addition to family beliefs, caregivers need to develop coping strategies to manage the negative emotions that arise. Given the crucial role of families in the patient's therapeutic process, they are required to possess effective emotion regulation skills when caring for older patients with chronic kidney disease. Emotion regulation is defined as an individual's ability to manage emotions and adapt to emerging challenges appropriately (Caprara et al., 2022). Families serving as caregivers, particularly for patients undergoing hemodialysis, often experience difficulties in regulating their emotions due to the prolonged nature of care and high levels of stress. According to Bandura's Social Cognitive Theory, self-efficacy is an individual's confidence in their ability to perform caregiving tasks enables caregivers to engage in effective emotion regulation by fostering a sense of control and adaptive coping strategies. Consequently, higher self-efficacy can enhance emotion regulation, which in turn reduces psychological distress, improving both caregiver well-being and the quality of care provided (Kaul et al., 2023). Despite this theoretical link, the relationship between self-efficacy, emotion regulation, and psychological distress among family caregivers remains underexplored, particularly in productive-age caregivers of hemodialysis patients. However, studies examining self-efficacy and emotion regulation in families caring for patients with chronic kidney disease remain very limited (Belinda & Dewi, 2021). Nevertheless, the nature of this relationship and its differential contribution to psychological distress have rarely been investigated. Therefore, this study aimed to examine the relationships among self-efficacy, emotion regulation, and psychological distress among family caregivers of working-age patients with chronic kidney disease.

Methods

Study Design

A cross-sectional, observational study was conducted to examine associations among self-efficacy, emotion regulation, and psychological distress at a single time point. Data were collected between September 2024 and February 2025 from family caregivers of CKD patients undergoing hemodialysis at a general hospital in Malang, Indonesia. The study was reported following STROBE guidelines to ensure standardized observational reporting.

Participants

A total of 201 family caregivers of productive-age (15–64 years) CKD patients undergoing hemodialysis were enrolled via convenience sampling. Inclusion criteria required a blood or marital relationship

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with the patient, caregiving for over three months, and proficiency in Indonesian; those with psychiatric disorders or unable to complete the questionnaire were excluded. The sample was adequate with α = 0.05 and power 0.95. All participants completed the study, yielding a 100% response rate.

Instruments

General self-efficacy scale (GSE)

Self-efficacy was assessed using the General Self-Efficacy Scale (GSE), originally developed by Matthias Jerusalem and Ralf Schwarzer in 1979. This instrument consists of 10 items that measure three core dimensions of self-efficacy—magnitude, generality, and strength. Each item is evaluated using a four-point Likert scale, with response options ranging from 1 to 4. The total self-efficacy score ranges from 10 to 40 and is classified into three levels: low (10–19), moderate (20–29), and high (30–40) self-efficacy (Jerusalem & Schwarzer, 1979). Validity and reliability testing of the General Self-Efficacy (GSE) questionnaire was conducted among 20 family members of patients with chronic kidney disease of productive age undergoing hemodialysis at Lavalette Hospital, Malang, on August 23, 2024. The validity analysis revealed that the corrected item–total correlation coefficients (r-calculated) ranged from 0.475 to 0.769, exceeding the minimum acceptable threshold, thereby indicating that all items were valid and adequately represented the construct being measured.

Emotion Regulation Questionnaire (ERQ)

Emotion regulation was assessed using the Emotion Regulation Questionnaire (ERQ) developed by Gross and John (2003). The ERQ consists of 10 items designed to measure two emotion regulation strategies, namely cognitive reappraisal and expressive suppression (Gross & John, 2003). Validity testing indicated that the item–total correlation coefficients (r-calculated) ranged from 0.464 to 0.736, all of which exceeded the critical r-value (r-table = 0.444), thereby confirming that all items were valid.

Psychological distress questionnaire (K10)

Psychological distress was measured using the Kessler Psychological Distress Scale (K10). The K10 consists of 10 items designed to identify symptoms of depression, anxiety, and other common mental disorders experienced during the past month (Duc et al., 2019). Each item is rated on a four-point ordinal Likert scale (1 = never, 2 = sometimes, 3 = often, 4 = always) for positively worded items, while scores for negatively worded items are reverse-coded. Total scores range from 10 to 40 and are categorized as low distress (10–19), moderate distress (20–29), and high distress (30–40) (Tran et al., 2019). All instruments were translated into Indonesian using a forward–backward translation process to ensure linguistic and conceptual equivalence. Cronbach's alpha coefficients indicated good internal consistency (GSE α = 0.88; ERQ α = 0.84; K10 α = 0.91). Permission for use of all instruments was obtained from the original authors, and the faculty review board granted ethical approval for instrument administration. Instruments were self-administered under researcher supervision, with scoring and category classifications maintained as described. Full instruments, including administration procedures and scoring tables, are provided in the supplementary material (Appendix A).

Data Collection

Data were collected offline via paper-based questionnaires, assisted by trained research assistants. Quality assurance included pilot testing and supervision. No missing data were observed.

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Data Analysis

Descriptive statistics were used to summarize quantitative variables, including self-efficacy, emotion regulation, psychological distress, and participant characteristics. Means and standard deviations were reported for numerical data. At the same time, descriptive variables included age, education, sex, economic status, familial relationship with the patient, distance from home to hospital, duration of caregiving, and frequency of dialysis per week for the patient. In this study, psychological distress was considered the dependent variable, whereas self-efficacy and emotion regulation were treated as independent variables. The associations between independent variables and psychological distress were assessed using Spearman's rank correlation, justified due to the non-normal distribution of the data. A two-sided significance level of $p < 0.05$ was applied. Effect sizes were interpreted based on correlation magnitude: 0.10–0.29 = small, 0.30–0.49 = moderate, and ≥0.50 = large. Statistical analyses were conducted using SPSS version 25.

Ethical Considerations

The study protocol was approved by the Ethics Committee of the Faculty of Medicine and Health Science, Universitas Brawijaya, Indonesia (ethical clearance No. 12488/UN10.F17.10.4/TU/2024). Written informed consent was obtained from all participants before data collection. Confidentiality was strictly maintained, and the study was conducted in accordance with the principles of the Declaration of Helsinki.

Results

According to the findings of this study, as presented in **Table 1,** the majority of participants were in the age group of family members was 44–55 years (46.35%). Most respondents were female (68.2%). The highest level of educational attainment was senior high school (46.3%). More than half of the respondents were unemployed (50.2%). Among those who were employed, the majority reported a monthly income of ≤3,368,275 IDR (76.6%). Most participants were spouses of the patients (48.8%). Most families lived within 10 km of the hospital (38.3%). The majority of patients had been diagnosed with chronic kidney disease for more than 3 months to 1 year (37.8%). A family history of kidney failure was absent in most cases (88.6%). Most patients underwent hemodialysis twice weekly (90.5%).

Table 1. Characteristics of the Participants

Characteristics	Category	Frequency (f)	Percentage (%)
Age	20 – 31 years	60	29.9
	32 – 43 years	48	23.9
	44- 55 years	93	46.3
Gender	Male	64	31.8
	Female	137	68.2
Education	No Education	2	1
	Elementary school	34	16.9
	Junior high school	37	18.4
	Senior high school	93	46.3
	University	35	17.4
Work	Working	100	49.8
	No working	101	50.2
Economy status	Under the minimum wage for work	154	76.6

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Characteristics	Category	Frequency (f)	Percentage (%)
	Above the minimum wage for work	47	23.4
Relationship between family and patient	Parents	18	9
	Husband/wife	98	48.8
	Child	76	37.8
	Siblings	9	4.5
Distance from home to hospital	Near (10 kilometers)	77	38.3
	Far enough (10-20 kilometers)	56	27.9
	Far (more than 20 kilometers)	6	33.8
Duration of care	>3 months – 1 year	76	37.8
	2 years	57	28.4
	3-5 years	37	18.4
	>5 years	31	15.4
Frequency of dialysis of a member's ill family member/week	1 time per week	6	3
	2 times per week	182	90.5
	3 times per week	13	6.5

Table 2 presents the descriptive statistics of the variables. The results in self-efficacy indicate that the magnitude was predominantly categorized as medium, with 108 participants (53.7%) falling into this group. Similarly, for the *generality,* 113 participants (56.21%) were classified in the medium category, and the majority were in the medium category (49.75%). With respect to the overall categorization of self-efficacy, 10 participants (5%) were in the low category, 55 participants (27.4%%) were in the moderate category, and 136 participants (67.7%) were in the high category.

The emotion regulation and its indicators. The *cognitive reappraisal* dimension, 28 participants (13.93%) were classified in the low category, whereas 123 participants (61.19%) were classified in the medium category. The expressive suppression dimension reflected a high level, with 147 participants (73.13%) categorized as high. Overall, 115 participants (57.21%) were identified as having a medium level of emotion regulation.

Among its indicators, *depression* predominantly fell within the low category (71.64%). The a*nxiety dimension is* also largely categorized as low (78.10%). These findings indicate that the majority of families caring for CKD patients undergoing haemodialysis demonstrated a low level of psychological distress.

Table 2. Self-efficacy, emotion regulation, and psychological distress

Variables	Indicators	Category					
		Low		Medium		High	
		f	%	f	%	f	%
Self-efficacy	Magnitude	11	5.47	108	53.7	82	40.7
	Generality	11	5.47	113	56.21	77	38.30
	Strength	12	5.97	100	49.75	89	44.27
	Self-efficacy	10	5	55	27.4	136	67.7
Emotion regulation	Cognitive reappraisal	28	13.93	123	61.19	50	24.87
	Expressive suppression	1	0.49	53	26.36	147	73.13

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Variables	Indicators	Category					
		Low		Medium		High	
		f	%	f	%	f	%
	Emotion regulation	10	4.97	115	57.21	76	37.81
Psychological distress	Depression	144	71.64	54	26.86	3	1.49
	Anxiety	157	78.10	39	19.40	2	2.48
	Psychological distress	138	68.65	57	28.35	6	2.98

The correlations among self-efficacy, emotion regulation, and psychological distress are shown in Table 3. There is a significant relationship between self-efficacy and psychological distress (p value <0.05), with a negative relationship indicating that the better the self-efficacy in fulfilling their role in caring for a CKD family member of haemodialysis productive age, the lower the family's psychological distress Furthermore, the test results revealed a significant correlation between emotion regulation and psychological distress, with higher levels of emotion regulation being associated with lower psychological distress in caregiving. The correlation analyses indicated that both self-efficacy and emotion regulation were moderately correlated with psychological distress. However, the magnitude of the correlation between self-efficacy and psychological distress was greater than that observed between emotion regulation and psychological distress (**Table 3**).

Table 3. Correlation between self-efficacy, emotion regulation, and psychological distress

Variable	Psychological distress	
	Sig. 2-tailed	r
Self-efficacy	0.000	- 0.346
Emotion regulation	0.000	- 0.217

Discussion

Emotion regulation and psychological distress

The study findings indicate that emotional regulation among family caregivers of working-age patients with chronic kidney disease undergoing hemodialysis is associated with psychological distress. Emotion regulation refers to a multidimensional psychological process through which individuals modulate the type, timing, and manner of their emotional experiences and expressions. This process is closely associated with various psychological and physiological responses that influence disease progression and the management of its treatment (Kaul et al., 2023). The findings of this study demonstrate that the majority of family members exhibit a moderate level of emotional regulation when caring for working-age patients with chronic kidney failure undergoing hemodialysis. The results also indicate that expressive suppression was more frequently utilized by respondents in providing care. This study aligns with the findings of Sachs-Ericsson et al. (2021), who reported that the use of cognitive reappraisal enhances positive affect, reduces the experience of negative emotions, and generally improves psychological well-being (Sachs-Ericsson et al., 2021).

Emotion regulation is defined as a multidimensional psychological process through which individuals adjust the nature, timing, and expression of their emotional experiences. The findings of this study indicate that the majority of

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caregivers demonstrated a high level of expressive suppression (73.13%), suggesting that they regulate their emotions by altering internal emotional responses and intentionally limiting the outward expression of their emotional states toward patients. These findings suggest that family members caring for hemodialysis patients tend to suppress the expression of their emotions and behaviors, such as anger or satisfaction, during caregiving. While the use of expressive suppression is often associated with elevated negative emotions and may lead to emotional dysregulation if employed continuously, its effectiveness is maximized when combined with cognitive reappraisal (Karademas & Thomadakis, 2020). The findings indicate that family caregivers of patients undergoing hemodialysis predominantly suppress emotional expressions and behaviors during the caregiving process. Emotion regulation is inherently social, involving both intrapersonal and interpersonal processes that occur along a continuum and often simultaneously. Regulation of one's own emotions may influence others' emotional states and behaviors through interpersonal modulation. In this study, caregivers' preference for expressive suppression appears to reflect an adaptive strategy aimed at minimizing the perceived emotional burden on the patients (Karademas & Thomadakis, 2020).

The findings of this study demonstrate a negative correlation, indicating that greater emotional regulation is associated with reduced psychological distress, including symptoms of depression and anxiety. These results are consistent with previous research in populations without CKD, which similarly reported a significant relationship between emotional regulation and both depression and stress (Valencia & Sinambela, 2022). This evidence further supports the theoretical proposition that difficulties in regulating emotions can contribute to elevated stress and depressive symptoms. Caregivers of working-age patients with chronic kidney disease face multifaceted challenges, including navigating complex health and social care systems, managing treatment demands and associated costs, experiencing physical and psychological strain, increased caregiving workload, restrictions on personal and social activities, financial burden, as well as difficulties related to employment and intimate relationships (Mahmoud et al., 2021). Family caregivers who are able to implement effective emotional regulation strategies can mitigate the negative impact of the stress associated with caring for patients with chronic illnesses (Flores-Kanter et al., 2021).

Self-efficacy and Family Psychological Distress

Based on the study results, there was a significant relationship between self-efficacy and psychological distress in family caregivers of patients with chronic kidney disease of productive age undergoing hemodialysis. The relationship was negative, indicating that higher levels of self-efficacy were associated with lower levels of psychological distress. Family caregivers play an active role in assisting patients to manage and cope with their illness during treatment.

This is in line with research conducted in Iran, which showed the same results that self-efficacy was negatively and quite strongly related to psychological distress (Shourabi & Vagharseyyedin, 2025). High levels of self-efficacy foster positive expectations regarding both the illness and the therapeutic process, thereby enhancing psychological resilience in coping with treatment-related stressors. Self-efficacy is associated with expectation formation, encompassing cognitive and motivational dimensions such as psychological resilience, goal-directed determination, and

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strategic goal-planning, as well as hope. The sense of hope derived from self-confidence mitigates negative emotions, including doubt and uncertainty, ultimately alleviating the psychological burden experienced by families in caregiving roles. Furthermore, self-efficacy constitutes a pivotal determinant in facilitating adaptive psychosocial adjustment (Sajadi et al., 2021; Shourabi & Vagharseyyedin, 2025; van Hof et al., 2023). Families with high self-efficacy exhibit stronger motivation and persistence in performing caregiving tasks. Conversely, low self-efficacy is associated with increased vulnerability to stress and a greater tendency toward psychological withdrawal. In the context of family caregiving, self-efficacy reflects the family's belief in their capability to manage patient care effectively. Families with high self-efficacy are more likely to optimize their caregiving abilities, experience lower levels of anxiety and stress, and demonstrate a reduced risk of depressive symptoms (Xiong et al., 2020).

Caregivers of patients with chronic kidney disease undergoing hemodialysis are involved in supporting activities of daily living (ADL), ensuring adherence to special diets, managing medications, and providing psychological support, all of which contribute to improving patients' quality of life. The complexity of caregivers' roles in the long-term management of patients with chronic kidney disease on hemodialysis can lead to a high caregiving burden (Prima et al., 2023). However, the results of this study showed that the majority of respondents reported low levels of psychological distress. This phenomenon may be attributed to the fact that caregivers' mental health status in providing care and support for patients with CKD is influenced by various demographic and clinical factors. Notable variations are observed across age groups, duration of caregiving, and gender, suggesting that these characteristics play a significant role in shaping caregivers' psychological experiences (Torrisi et al., 2025). The findings of this study reveal that the majority of families fall within the 44–55-year age range, a period typically characterized by diverse life experiences that foster mental and emotional resilience. Such experiences enhance families' capacity to develop effective coping mechanisms when confronted with a stressor. Individuals within this age group are generally in a phase of financial and social stability, which may alleviate psychological strain associated with economic challenges or employment insecurity, thereby reducing the risk of stress (Hale et al., 2023). In addition, most respondents were women, who often employ adaptive coping strategies such as seeking social support, participating in constructive activities, and engaging in self-reflection approaches shown to mitigate symptoms of psychological distress effectively (Mommersteeg et al., 2024). Moreover, long-term caregivers tend to establish more robust social support networks, as assistance from friends, relatives, and community members contributes significantly to enhancing the family's psychological well-being.

Furthermore, most caregivers in this study had provided care for more than one year, which allowed them to develop greater physical, psychological, and financial adaptation to the challenges associated with caring for patients of productive age who experienced reduced work capacity and economic instability. This finding is consistent with previous research conducted in Lebanon, which reported that caregivers with stronger mental preparedness in caring for individuals with chronic illnesses experienced lower levels of psychological fatigue (Massouh et al., 2025). This finding is consistent with previous research conducted in Malaysia, which demonstrated

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that caregivers' characteristics influence their appraisal of caregiving challenges, thereby shaping the levels of perceived burden and depressive symptoms experienced in the caregiving process (Mohamad et al., 2024). The stronger association of self-efficacy with psychological distress can be interpreted through Bandura's Social Cognitive Theory, where confidence in one's caregiving ability directly enhances coping strategies, promotes effective emotion regulation, and reduces perceived stress. In the LMIC context of Indonesia, limited healthcare resources, economic constraints, and insufficient formal support increase reliance on family caregiving, magnifying the protective role of self-efficacy.

Implications and limitations

This study found that there were relationships between psychological distress and both self - efficacy and emotion regulation among family care givers. This study contributes to the caregiving literature by highlighting self-efficacy and emotion regulation as key psychosocial mechanisms that influence caregiver well-being, suggesting that interventions targeting these factors may mitigate psychological distress and indirectly improve patient outcomes. Theoretically, the findings extend existing models of caregiver stress by positioning self-efficacy and emotion regulation as critical mediators in the experience of psychological distress. Nevertheless, this study has several limitations. First, it was conducted at a single hospital, which may limit the generalizability of the findings to caregivers in other healthcare settings or geographic regions. Second, the cross-sectional design precludes causal inferences regarding the relationships among psychological distress, self-efficacy, and emotion regulation. Third, reliance on self-report measures introduces potential biases, including social desirability and recall bias.

Relevance to Practice

Nurses should routinely screen family caregivers' psychological distress, self-efficacy, and emotion regulation using brief, validated tools during dialysis sessions or patient visits. Caregivers identified as high-risk should be promptly referred and coordinated with hospital-based counseling or community psychosocial services. Ensuring caregivers' psychological well-being enables them to provide effective care and support to patients with chronic kidney disease.

Conclusion

Higher self-efficacy and effective emotion regulation among family caregivers of CKD patients are associated with lower psychological distress. Enhancing these skills may reduce caregiver distress and improve home-based care. Future research should test targeted interventions, such as psychosocial programs or emotion regulation training, to strengthen caregiver well-being and patient outcomes.

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CrediT Authorship Contributions Statement

Lilik Supriati: Conceptualization, Methodology, Supervision, Writing - Original Draft

Muhammad Sunart: Validation, Formal Analysis, Writing - Review & Editing

Renny Nova: Validation, Formal Analysis, Writing - Review & Editing

Rinik Eko Kapti: Investigation, Resources, Data Curation, Project Administration

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I Dewa Ayu Rismayanti: Writing - Original Draft, Review & Editing, Visualization,

Conflicts of Interest

There is no conflict of interest.

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Supplementary Materials

Supplementary File S1: Research Instrument contains the full questionnaire used for data collection.

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